

Appl. No. 09/732,432
Amdt. Dated: May 27, 2004
Reply to Office Action of April 7, 2004

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. – 16. (Canceled)

17. (Currently Amended) A network device for optical data communications, comprising:
a two-dimensional central array comprised of a plurality of central node transmitters and a plurality of central node receivers, wherein said central array is divided into at least one subarray;
at least one secondary node comprised of at least one dedicated secondary node receiver and a plurality of secondary node transmitters, wherein each secondary node is respectively coupled to said subarray, and wherein each said secondary node is dedicated secondary node receiver and said plurality of secondary node transmitters are coupled to each said subarray;
a plurality of optical communications lines coupling said central array and said secondary node; and
a means for processing said optical data using a receiver reserved protocol wherein each said secondary node receives said optical data only on said dedicated secondary node receiver and said secondary node transmits said optical data to said central node receivers of said subarray.

18. (Previously Presented) The network device according to claim 17, further comprising at least one additional central array coupled to said central array and said secondary node.

19. (Previously Presented) The network device according to claim 18, further comprising at least one secondary node coupled to said additional central array.

20. (Previously Presented) The network device according to claim 17, wherein said optical data includes minimal header information.

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21. (Previously Presented) The network device according to claim 17, wherein said optical communications lines is an ordered fiber array.
22. (Previously Presented) The network device according to claim 17, wherein said optical communications lines are coupled with a one-to-one correspondence between said central array and said secondary node.
23. (Previously Presented) The network device according to claim 17, wherein said central node transmitters are selected from the group consisting of Vertical channel surface emitting lasers (VCSELs), light emitting diodes (LEDs) and Resonant Cavity Light Emitting Diode (RCLED).
24. (Previously Presented) The network device according to claim 17, further comprising a central array processor on said central array with a first-in-first-out (FIFO) buffer.
25. (Previously Presented) The network device according to claim 17, wherein each said secondary node is a leaf node.
26. (Previously Presented) The network device according to claim 17, wherein each said secondary node is a combination of at least one additional central array and at least one additional leaf node.
27. (Previously Presented) The network device according to claim 17, further comprising a watchdog function for each said secondary node.
28. (Currently Amended) A reconfigurable optical data communications topology, comprising:
a two-dimensional central optoelectronic array divided into a plurality of subarrays, each of said subarrays having a plurality of central array emitters and a plurality of central array detectors, wherein said central array emitters and central array detectors are fabricated onto a substrate and coupled to electronic circuitry;

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an ordered fiber array comprising a plurality of fiber optic cables that that are coupled on a first end of said fiber optic cables to said central array emitters and said central array detectors, and wherein said ordered fiber array is divided into a plurality of fiber optic bundles at a second end; and
a plurality of nodes each coupled to corresponding said subarrays, with said nodes having at least one dedicated node detector and more than one node emitter, wherein said more than one node emitter and said node detector of each said plurality of nodes are optically coupled to said subarrays by said second end of said fiber optic cables, and wherein said central array communicates with said nodes using a receiver reserved protocol, each of said nodes receiving optical data only on said dedicated node detector and each said node emitter transmitting optical data to said central array receivers of said subarrays

29. (Previously Presented) The reconfigurable optical data communications topology according to claim 28, wherein said topology is configured from the group consisting of: linear bus network, tree topology, star network, switched fabric and ring network.
30. (Previously Presented) The reconfigurable optical data communications topology according to claim 28, further comprising an optical interconnect coupling said central optoelectronic array to said ordered fiber array.
31. (Previously Presented) The reconfigurable optical data communications topology according to claim 28, wherein at least one of said nodes comprises a central processing unit.
32. (Previously Presented) The reconfigurable optical data communications topology according to claim 28, wherein at least one of said nodes is on said substrate.
33. (Previously Presented) The reconfigurable optical data communications topology according to claim 28, wherein said at least one node detector communicates with said central array over a multi-bit bus.

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34. (Previously Presented) The reconfigurable optical data communications topology according to claim 28, further comprising an arbitration scheme.

35. (Previously Presented) The reconfigurable optical data communications topology according to claim 28, wherein said fiber optic bundles at said second end are relocatable to another node .